If the pressure relief device releases before the end of the fifth minute after ignition, then the minimum temperature requirement does not apply.

S8.3.6 *Recording data.* Record time, temperature, and pressure readings at 30 second intervals, beginning when the fire is ignited and continuing until the pressure release device releases.

S8.3.7 *Duration of exposure to fire source.* The CNG fuel container is exposed to the fire source for 20 minutes after ignition or until the pressure release device releases, whichever period is shorter.

S8.3.8 *Number of tests per container.* A single CNG fuel container is not subjected to more than one bonfire test.

S8.3.9 *Wind velocity.* The average ambient wind velocity at the CNG fuel container during the period specified in S8.3.6 of this standard is not to exceed 2.24 meters/second (5 mph).

S8.3.10 The average wind velocity at the container is any velocity up to and including 2.24 meters/second (5 mph).

[59 FR 49021, Sept. 26, 1994; 59 FR 66776, Dec. 28, 1994; 60 FR 37843, July 24, 1995; 60 FR 57948, Nov. 24, 1995; 61 FR 19204, May 1, 1996; 61 FR 47089, Sept. 6, 1996; 63 FR 66765, Dec. 3, 1998; 65 FR 51772, Aug. 25, 2000; 65 FR 64626, Oct. 30, 2000]

§571.305 Standard No. 305; Electric-powered vehicles: electrolyte spillage and electrical shock protection.

S1. *Scope.* This standard specifies requirements for limitation of electrolyte spillage, retention of propulsion batteries during a crash, and electrical isolation of the chassis from the high-voltage system, to be met by vehicles that use electricity as propulsion power .

S2.*Purpose.* The purpose of this standard is to reduce deaths and injuries during a crash which occur because of electrolyte spillage from propulsion batteries, intrusion of propulsion battery system components into the occupant compartment, and electrical shock.

S3 *Application.* This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks and buses with a GVWR of 4536 kg or less, that use more than 48 nominal volts of electricity as propulsion power and whose speed attainable in 1.6 km on a paved level surface is more than 40 km/h.

S4. *Definition.*

Battery system component means any part of a battery module, interconnect, venting system, battery restraint device, and battery box or container which holds the individual battery modules.

Dummy means a 50th percentile male test dummy as specified in subpart F of part 572 of this chapter.

S5. *General requirements.* Each vehicle to which this standard applies, when tested according to S6 under the conditions of S7, must meet the requirements of S5.1, S5.2, and S5.3.

S5.1 *Electrolyte spillage from propulsion batteries.* Not more than 5.0 liters of electrolyte from propulsion batteries shall spill outside the passenger compartment, and no visible trace of electrolyte shall spill into the passenger compartment. Spillage is measured from the time the vehicle ceases motion after a barrier impact test until 30 minutes thereafter, and throughout any static rollover after a barrier impact test.

S5.2 *Battery Retention.* Battery modules located inside the passenger compartment must remain in the location in which they are installed. No part of any battery system component that is located outside the passenger compartment shall enter the passenger compartment during the test procedures of S6 of this standard, as determined by visual inspection.

S5.3 *Electrical isolation.* Electrical isolation between the battery system and the vehicle electricity-conducting structure after each test must be not less than 500 ohms/volt.

S6. *Test requirements.* Each vehicle to which this standard applies, under the conditions of S7, must be capable of meeting the requirements of any applicable single barrier crash/static rollover test sequence, without alteration of the vehicle during the test sequence. A particular vehicle need not meet further test requirements after having been subjected to a single barrier crash/static rollover test sequence.

S6.1 *Frontal barrier crash.* The vehicle must meet the requirements of S5.1, S5.2 and S5.3 when it is traveling longitudinally forward at any speed, up to

and including 48 km/h, and impacts a fixed collision barrier that is perpendicular to the line of travel of the vehicle, or at any angle up to 30 degrees in either direction from the perpendicular to the line of travel of the vehicle.

S6.2 *Rear moving barrier impact.* The vehicle must meet the requirements of S5.1, S5.2, and S5.3, when it is impacted from the rear by a barrier moving at any speed up to and including 48 km/h, with a dummy at each front outboard designated seating position.

S6.3 *Side moving deformable barrier impact.* The vehicle must meet the requirements of S5.1, S5.2, and S5.3 when it is impacted from the side by a barrier that conforms to part 587 of this chapter that is moving at any speed up to and including 54 km/h, with dummies positioned in accordance with S7 of Sec. 571.214 of this chapter.

S6.4 *Post-impact test static rollover.* The vehicle must meet the requirements of S5.1, S5.2, and S5.3, after being rotated on its longitudinal axis to each successive increment of 90 degrees after each impact test specified in S6.1, S6.2, and S6.3.

S7. *Test conditions.* When the vehicle is tested according to S6, the requirements of S5 must be met under the conditions in S7.1 through S7.6.7. Where a range is specified, the vehicle must be capable of meeting the requirements at all points within the range.

S7.1 *Battery state of charge.* The battery system is at the level specified in the following paragraph (a), (b), or (c), as appropriate:

(a) At the maximum state of charge recommended by the manufacturer, as stated in the vehicle operator's manual or on a label that is permanently affixed to the vehicle;

(b) If the manufacturer has made no recommendation, at a state of charge of not less than 95 percent of the maximum capacity of the battery system; or

(c) If the batteries are rechargeable only by an energy source on the vehicle, at any state of charge within the normal operating voltage, as defined by the vehicle manufacturer.

S7.2 *Vehicle conditions.* The switch or device that provides power from the propulsion batteries to the propulsion motor(s) is in the activated position or the ready-to-drive position.

S7.2.1 The parking brake is disengaged and the transmission, if any, is in the neutral position. In a test conducted under S6.3, the parking brake is set.

S7.2.2 Tires are inflated to the manufacturer's specifications.

S7.2.3 The vehicle, including test devices and instrumentation, is loaded as follows:

(a) A passenger car is loaded to its unloaded vehicle weight plus its rated cargo and luggage capacity weight, secured in the luggage area, plus the necessary test dummies as specified in S6, restrained only by means that are installed in the vehicle for protection at its seating position.

(b) A multipurpose passenger vehicle, truck, or bus with a GVWR of 4536 kg or less is loaded to its unloaded vehicle weight plus the necessary dummies, as specified in S6, plus 136 kg or its rated cargo and luggage capacity weight, whichever is less. Each dummy is restrained only by means that are installed in the vehicle for protection at its seating position.

S7.3 *Static rollover test conditions.* In addition to the conditions of S7.1 and S7.2, the conditions of S7.4 of Sec. 571.301 of this chapter apply to the conduct of static rollover tests specified in S6.4.

S7.4 *Rear moving barrier impact test conditions.* In addition to the conditions of S7.1 and S7.2, the conditions of S7.3 of Sec. 571.301 of this chapter apply to the conduct of the rear moving barrier impact test specified in S6.2. The rear moving barrier is described in S8.2 of Sec. 571.208 of this chapter and diagramed in Figure 1 of Sec. 571.301 of this chapter.

S7.5 *Side moving deformable barrier impact test conditions.* In addition to the conditions of S7.1 and S7.2, the conditions of S6.10, S6.11, and S6.12 of Sec. 571.214 of this chapter apply to the conduct of the side moving deformable barrier impact test specified in S6.3.

S7.6 *Electrical isolation test procedure.* In addition to the conditions of S7.1 and S7.2, the conditions in S7.6.1 through S7.6.7 apply to the measurement of electrical isolation specified in S5.3.

S7.6.1 Prior to any barrier impact test, the propulsion battery system is connected to the vehicle's propulsion system, and the vehicle ignition is in the ''on'' (traction (propulsion) system energized) position. If the vehicle utilizes an automatic disconnect between the propulsion battery system and the traction system that is physically contained within the battery pack system, the electrical isolation measurement after the impact is made from the traction side of the automatic disconnect to the vehicle chassis. If the vehicle utilizes an automatic disconnect that is not physically contained within the battery pack system, the electrical isolation measurement after the impact is made from the battery side of the automatic disconnect to the vehicle chassis.

S7.6.2 The voltmeter used in this test measures direct current values and has an internal resistance of at least 10 MΩ

S7.6.3 The voltage is measured as shown in Figure 1 and the propulsion battery voltage (Vb) is recorded. Before any vehicle impact test, Vb is equal to or greater than the nominal operating voltage as specified by the vehicle manufacturer.

S7.6.4 The voltage is measured as shown in Figure 2, and the voltage (V1) between the negative side of the propulsion battery and the vehicle chassis is recorded.

S7.6.5 The voltage is measured as shown in Figure 3, and the voltage (V2) between the positive side of the propulsion battery and the vehicle chassis is recorded.

S7.6.6 If V1 is greater than or equal to V2, insert a known resistance (Ro) between the negative side of the propulsion battery and the vehicle chassis. With the Ro installed, measure the voltage (V1') as shown in Figure 4 between the negative side of the propulsion battery and the vehicle chassis. Calculate the electrical isolation (Ri) according to the formula shown. This electrical isolation value (in ohms) divided by the nominal operating voltage of the propulsion battery (in volts) must be equal to or greater than 500.

S7.6.7 If V2 is greater than V1, insert a known resistance (Ro) between the positive side of the propulsion battery and the vehicle chassis. With the Ro installed, measure the voltage and record the voltage (V2') between the positive side of the propulsion battery and the vehicle chassis as shown in Figure 5. Calculate the electrical isolation (Ri) according to the formula shown. This electrical isolation value (in ohms) divided by the nominal operating voltage of the propulsion battery (in volts) must be equal to or greater than 500.

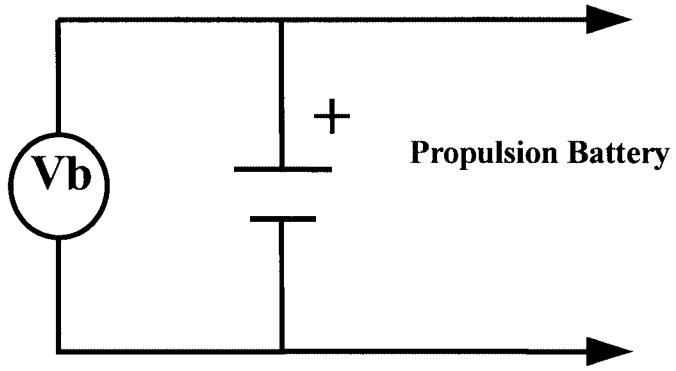

Figure 1. S7.6.3 Measurement Location For Vb Voltage

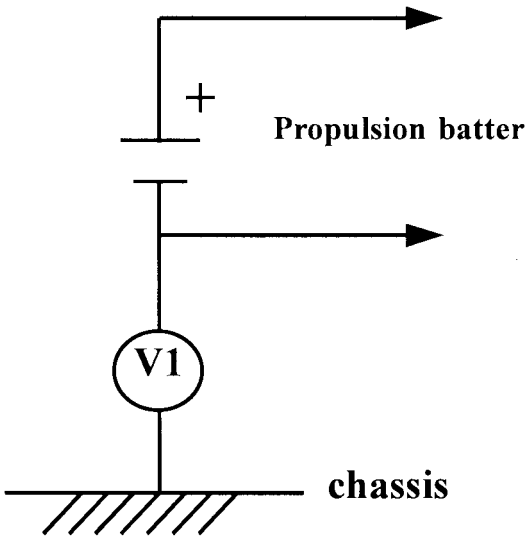

Figure 2. S7.6.4 Measurement Location For V1 Voltage

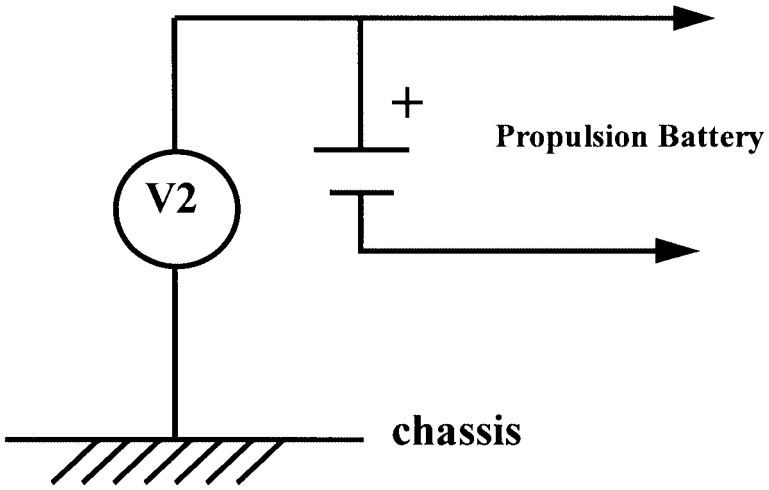

Figure 3. S7.6.5 Measurement Location For V2 Voltage

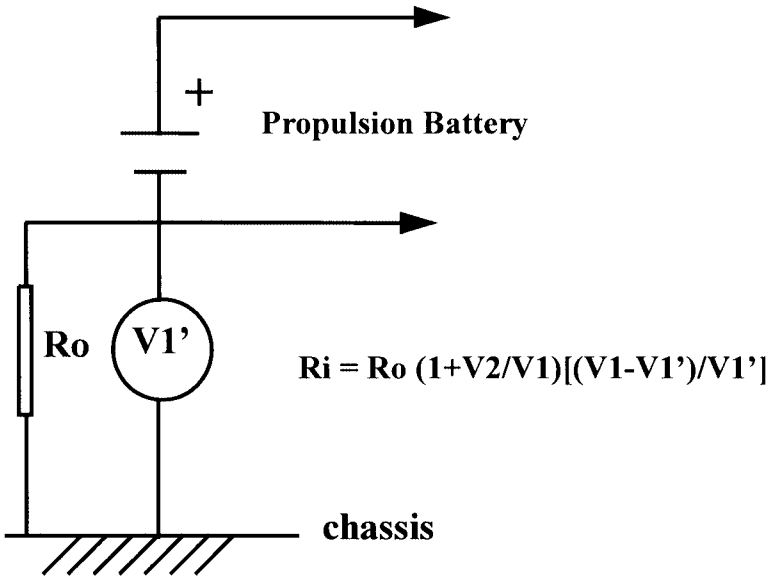

Figure 4. S7.6.6 Measurement Location For V1' Voltage

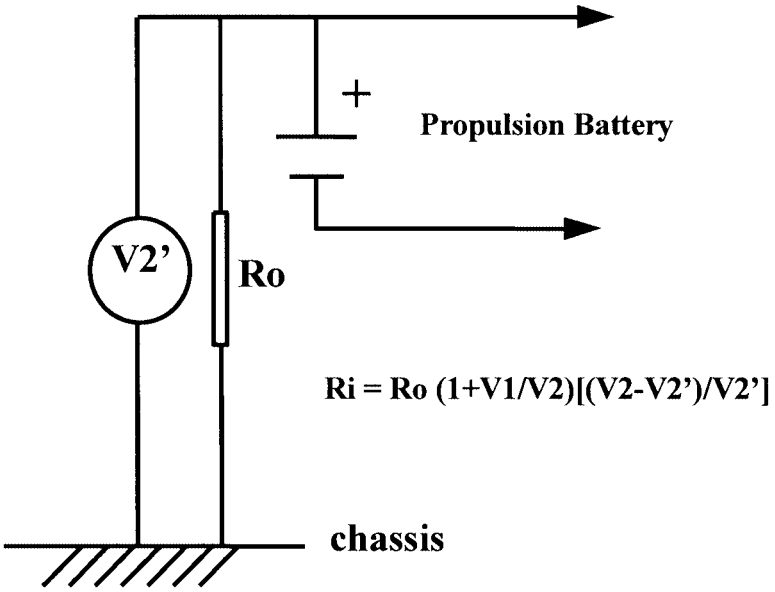

Figure 5. S7.6.7 Measurement Location For V2' Voltage

[65 FR 57988, Sept. 27, 2000, as amended at 66 FR 60160, Dec. 3, 2001]

§ 571.401 Standard No. 401; Interior trunk release.

S1. *Purpose and scope.* This standard establishes the requirement for providing a trunk release mechanism that makes it possible for a person trapped inside the trunk compartment of a passenger car to escape from the compartment.

S2. *Application.* This standard applies to passenger cars that have a trunk compartment. This standard does not apply to passenger cars with a back door.

S3. *Definitions.*

Back door means a door or door system on the back end of a passenger car through which cargo can be loaded or unloaded. The term includes the hinged back door on a hatchback or a station wagon.

Trunk compartment. (a) Means a space that:

(1) Is intended to be used for carrying luggage or cargo,

(2) Is wholly separated from the occupant compartment of a passenger car by a permanently attached partition or by a fixed or fold-down seat back and/or partition,

(3) Has a trunk lid, and

(4) Is large enough so that the three-year-old child dummy described in Subpart C of Part 572 can be placed inside the trunk compartment, and the trunk lid can be closed and latched with all removable equipment furnished by the passenger car manufacturer stowed in accordance with label(s) on the passenger car or information in the passenger car owner's manual, or, if no information is provided, as located when the passenger car is delivered. (Note: For purposes of this standard, the Part 572 Subpart C test dummy need not be equipped with the accelerometers specified in § 572.21.)